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EXAMINER	
MEW, KEVIN D	

ART UNIT	PAPER NUMBER
2616	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/806,947	RINNE, MIKKO J	
	Examiner	Art Unit	
	Kevin Mew	2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 September 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Detailed Action

Response to Amendment

1. Applicant's Arguments/Remarks received on 9/12/2006 regarding claims 1-20 have been considered. Claims 21-30 have been newly added by applicant and claims 1-30 are currently pending.

Claim Objections

2. Claim 21 is objected to because of the following informalities:

In line 13, claim 21, the term "a receiving end" should be amended to "at a receiving end."

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-16, 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kudoh et al. (USP 5,414,702) in view of Jeon et al. (USP 5,701,300).

Regarding claim 1, Kudoh discloses a data segmentation method in a telecommunications system, comprising:

segmenting (disassembling, col. 3, lines 24-30 and Fig. 3) larger data units of a higher layer (CS Sublayer protocol data unit CS-PDU) into smaller protocol data units of a lower layer (CS Sublayer protocol data unit CS-PDU is divided into smaller SAR sublayer cell data units, SAR-PDU, see col. 3, lines 24-67 and Fig. 3) so that each lower layer protocol data unit includes one or more data segments each containing data from a different one of the higher layer data units (each of the lower layer SAR-PDU units includes a different one of the upper CD-PDU units, see Fig. 3);

providing each lower layer protocol data unit contains two or more data segments (each SAR-PDU contains SARH, SART, and SAR-SDU, Fig. 3), with segmentation length information which otherwise indicates length of the data segments (the combined information of the ST and LI fields of SAR-PDU, Fig. 4);

transmitting the lower level protocol data units to a receiving end (transmitting SAR-PDUs to buffer device, see element 3, Fig. 1); wherein

the segmented higher level data unit can be assembled at the receiving end by means of the segmentation length information (SAR-PDUs are assembled into a higher layer CS-PDU using the LI field of the segmentation length information, see col. 7, lines 3-9).

Kudoh does not explicitly show indicating with predetermined values of the segmentation length information, special information about the higher level protocol data unit instead of the length of the segments, at least in each lower layer protocol data unit that contains two or more data segments from two or more different higher layer data units.

However, Jeon teaches that in a Common Part Convergence Sublayer comprising a plurality of CPCS-PDUs (two or more different higher layer data units), and each CPCS-PDU is divided into a plurality of SAR-PDU segments wherein a segment type field ST of the SAR-PDU segment is used as a special information to indicate which portion of the upper layer CPCS-PDU each SAR-PDU segment is located in (col. 1, lines 54-67 and col. 2, lines 1-16). Jeon shows the specific use of the ST field in the SAR-PDU.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine data assembling/disassembling system and method of Kudoh with the teaching of Jeon in disclosing the segment type field ST of each of SAR-PDUs contains special information to indicate which portion of the upper layer CPCS-PDU each SAR-PDU segment is located in such that the modified method and system of Kudoh discloses indicating with predetermined values of the segmentation length information, special information about the higher level protocol data unit instead of the length of the segments, at least in each lower layer

protocol data unit that contains two or more data segments from two or more different higher layer data units.

The motivation to do so is to indicate whether the SAR-PDU segment is a BOM Beginning of Message, COM (Continuation of Message), or EOM (End of Message).

Regarding claim 2, Kudoh discloses the apparatus to perform the method of claims 1 and 21, wherein the special information includes indication whether the higher layer data unit ends in a current data segment (ending of message EOM, see col. 3, lines 31-67) or continues to a next lower level protocol data unit (continuing of message COM, see col. 3, lines 31-67).

Regarding claim 3, Kudoh discloses the method of claims 1 and 21, further comprising indicating with a predetermined value of the segmentation length information that the rest of the lower level protocol data unit contains padding until a next segmentation length information or a next lower level protocol data unit contains padding (see the PAD field, which is a preset integer of β bytes, of the SAR-PDU unit in the SAR Sublayer, see col. 3, lines 31-42 and Fig. 4).

Regarding claim 4, Kudoh discloses the method of claims 1 and 21, further comprising indicating with the segmentation length information an exact point in the end of the lower layer protocol data unit that the higher layer data unit ends (ending of message EOM in the SAR-PDU unit of the SAR sublayer, see col. 3, lines 31-67).

Regarding claim 5, Kudoh discloses the method of claims 1 and 21, further comprising indicating with a predetermined value of the segmentation length information that the higher layer data unit carried in a current data segment continues to a next lower level protocol data unit (continuing of message COM in the SAR-PDU unit of the SAR sublayer, see col. 3, lines 31-67).

Regarding claim 6, Kudoh discloses a data segmentation method in a telecommunication system, comprising:

segmenting larger data units of a higher layer (CS Sublayer protocol data unit CS-PDU) into smaller protocol data units of a lower layer (CS Sublayer protocol data unit CS-PDU is divided into smaller SAR sublayer cell data units, SAR-PDU, see col. 3, lines 24-67 and Fig. 3) so that each lower layer protocol data unit includes one or more data segments each containing data from a different one of the higher layer data units (each of the lower layer SAR-PDU units includes a different one of the upper CD-PDU units, see Fig. 3);

providing each lower layer protocol data unit that contains two or more data segments (each SAR-PDU contains SARH, SART, and SAR-SDU, Fig. 3), with segmentation length information which otherwise indicates length of the data segments (the combined information of the ST and LI fields of SAR-PDU, Fig. 4);

the segmented higher level data unit can be assembled at a receiving end by means of the segmentation length information (the SAR-PDUs are assembled into a higher layer CS-PDU using the LI field of the segmentation length information, see col. 7, lines 3-9); and

providing no segmentation information in a lower layer protocol data unit (when receiving no LI) which contains data only from a single one of the higher layer data units and no padding (the value of 44 bytes are outputted as the effective length of the SAR-PDU, see col. 7, lines 3-9).

Kudoh does not explicitly show indicating with predetermined values of the segmentation length information, special information about the higher level protocol data unit instead of the length of the segments, in each lower layer protocol data unit that contains two or more data segments from two or more different higher layer data units.

However, Jeon teaches that in a Common Part Convergence Sublayer comprising a plurality of CPCS-PDUs (two or more different higher layer data units), and each CPCS-PDU is divided into a plurality of SAR-PDU segments wherein a segment type field ST of the SAR-PDU is used as a special information to indicate which portion of the upper layer CPCS-PDU each SAR-PDU segment is located in (col. 1, lines 54-67 and col. 2, lines 1-16). Jeon shows the specific use of the ST field in the SAR-PDU.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine data assembling/disassembling system and method of Kudoh with the teaching of Jeon in disclosing the segment type field of each of SAR-PDUs contains special information to indicate which portion of the upper layer CPCS-PDU each SAR-PDU segment is located in such that the modified method and system of Kudoh discloses indicating with predetermined values of the segmentation length information (indicating with the ST field of the SAR-PDU), special information about the higher level protocol data unit instead of the

length of the segments, at least in each lower layer protocol data unit that contains two or more data segments from two or more different higher layer data units.

The motivation to do so is to indicate whether the SAR-PDU segment is a BOM Beginning of Message, COM (Continuation of Message), or EOM (End of Message).

Regarding claim 7, Kudoh discloses the method of claim 1, further comprising providing segmentation information (SARH and SART of the SAR-PDU) in a lower layer protocol data unit (SAR-PDU) which contains data only from a single one of the higher layer data units (contains data from the CS-PDU, see Fig. 3) and padding (PAD field, see Fig. 3).

Regarding claim 8, Kudoh discloses segmentation method in a telecommunications system comprising:

segmenting larger data units of a higher layer (CS Sublayer protocol data unit CS-PDU) into smaller protocol data units of a lower layer (CS Sublayer protocol data unit CS-PDU is divided into smaller SAR sublayer cell data units, SAR-PDU, see col. 3, lines 24-67 and Fig. 3) so that each lower layer protocol data unit includes one or more data segments each containing data from a different one of the upper layer data units (each of the lower layer SAR-PDU units includes a different one of the upper CD-PDU units, see Fig. 3);

providing each lower layer protocol data unit contains two or more data segments (each SAR-PDU contains SARH, SART, and SAR-SDU, Fig. 3), with segmentation length information which otherwise indicates length of the data segments (the combined information of the ST and LI fields of SAR-PDU, Fig. 4);

transmitting the lower level protocol data units to a receiving end (transmitting SAR-PDUs to buffer device, see element 3, Fig. 1); and

the segmented higher level data unit can be assembled at the receiving end by means of the segmentation length information (SAR-PDUs are assembled into a higher layer CS-PDU using the LI field of the segmentation length information, see col. 7, lines 3-9 and Figs. 2 and 5); and

carrying the segmented higher layer data units in the payload units (carrying CS-PDU into SAR-PDU units, see Fig. 3);

providing a segmentation indicator field in a beginning of one or more of the payload units in the lower level protocol data unit, if required (providing SARH at the beginning of each SAR-PDU unit, see Fig. 3); and

indicating in a header (Segment Type ST) of the lower layer protocol data unit (Segment Type ST in the header of the SAR-PDU) which one or ones, if any, of the payload units contain the segmentation length information (Segment Type indicates whether it is the ending of message EOM, and if it is, the last payload unit is appended with LI effective length information, see col. 3, lines 51-67 and Fig. 3).

Kudoh does not explicitly show indicating with predetermined values of the segmentation length information, special information about the higher level protocol data unit instead of the length of the segments, in each lower layer protocol data unit that contains two or more data segments from two or more different higher layer data units.

However, Jeon teaches that in a Common Part Convergence Sublayer comprising a plurality of CPCS-PDUs (two or more different higher layer data units), and each CPCS-PDU is

divided into a plurality of SAR-PDU segments wherein a segment type field ST is used as a special information to indicate which portion of the upper layer CPCS-PDU each SAR-PDU segment is located in (col. 1, lines 54-67 and col. 2, lines 1-16). Jeon shows the specific use of the ST field in the SAR-PDU. Jeon shows the specific use of the ST field in the SAR-PDU.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine data assembling/disassembling system and method of Kudoh with the teaching of Jeon in disclosing the segment type field ST of each of SAR-PDUs contains special information to indicate which portion of the upper layer CPCS-PDU each SAR-PDU segment is located in such that the modified method and system of Kudoh discloses indicating with predetermined values of the segmentation length information, special information about the higher level protocol data unit instead of the length of the segments, at least in each lower layer protocol data unit that contains two or more data segments from two or more different higher layer data units.

The motivation to do so is to indicate whether the SAR-PDU segment is a BOM Beginning of Message, COM (Continuation of Message), or EOM (End of Message).

Regarding claim 9, Kudoh discloses the method of claim 8, further comprising providing a segmentation indicator field (SARH, see Fig. 3) in a beginning of a first one of the payload units (SARH of the SAR-PDU, see Fig. 3) for indicating segmentation information for all segments in the lower level protocol data unit, if required (SARH indicates Segment Type, Sequence Number of Multiplexing Identifier MID, see col. 3, lines 51-67).

Regarding claim 10, Kudoh discloses a telecommunications system, comprising

an upper protocol layer including upper layer data units (CS sublayer includes CS-PDU units, see col. 3, lines 31-67);

a lower protocol layer (SAR sublayer) including protocol data units (SAR-PDUs) having a payload size smaller than the upper layer data units (SAR-PDU units have payload size smaller the CS-PDU units in the CS sublayer, see col. 3, lines 31-50 and Fig. 3);

means for segmenting larger data units of a higher layer (CS Sublayer protocol data unit CS-PDU) into smaller protocol data units of a lower layer (CS Sublayer protocol data unit CS-PDU is divided into smaller SAR sublayer cell data units, SAR-PDU, see col. 3, lines 24-67 and Fig. 3) so that each lower layer protocol data unit includes one or more data segments (each SAR-PDU contains SARH, SART, and SAR-SDU, Fig. 3) each containing data from a different one of the upper layer data units (each of the lower layer SAR-PDU units includes a different one of the upper CS-PDU units, see Fig. 3);

means for inserting segmentation length information (the combined information of the ST and LI fields of SAR-PDU, Fig. 4) which indicates length of the data segments (LI field, Fig. 4) at least in each lower layer protocol data unit (in each SAR-PDU unit, Fig. 4) that contains two or more data segments (that contains SARH, SART, and SAR-SDU, Fig. 3);

means for providing a predetermined value in the segmentation length information to a receiver (providing a segment type field ST in the SAR-PDU, Fig. 4),

means for assembling the segmented higher level data units from received lower layer protocol data units at the receiver by means of the segmentation length information in

the protocol data units (SAR-PDUs are assembled into a higher layer CS-PDU using the LI field of the segmentation length information, see col. 4, lines 22-33, col. 7, lines 3-9).

Kudoh does not explicitly show the predetermined value including special information about the higher level protocol data unit instead of the length of the segments (ending of message EOM, see col. 3, lines 31-67) at least in each lower layer protocol data unit that contains two or more data segments coming from two or more different upper layer units (lower layer SAR sublayer contains a plurality of SAR-PDUs);

However, Jeon teaches that in a Common Part Convergence Sublayer comprising a plurality of CPCS-PDUs (two or more different higher layer data units), and each CPCS-PDU is divided into a plurality of SAR-PDU segments wherein a segment type field ST is used as a special information to indicate which portion of the upper layer CPCS-PDU each SAR-PDU segment is located in (col. 1, lines 54-67 and col. 2, lines 1-16). Jeon shows the specific use of the ST field in the SAR-PDU.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine data assembling/disassembling system and method of Kudoh with the teaching of Jeon in disclosing the segment type field ST of each of SAR-PDUs contains special information to indicate which portion of the upper layer CPCS-PDU each SAR-PDU segment is located in such that the modified method and system of Kudoh discloses indicating with predetermined values of the segmentation length information, special information about the higher level protocol data unit instead of the length of the segments, at least in each lower layer protocol data unit that contains two or more data segments from two or more different higher layer data units.

The motivation to do so is to indicate whether the SAR-PDU segment is a BOM Beginning of Message, COM (Continuation of Message), or EOM (End of Message).

Regarding claim 11, Kudoh discloses the system of claim 10, further comprising a predetermined value of the segmentation length information indicating to the receiver that a rest of the lower level protocol data unit contains no padding until a next segmentation length information or a next lower level protocol data unit contains padding (see the PAD field, which is a preset integer of β bytes, of the SAR-PDU unit in the SAR Sublayer where no padding is used, see col. 3, lines 31-42 and Fig. 4).

Regarding claim 12, Kudoh discloses the system of claim 10, further comprising a predetermined value of the segmentation length information indicating to the receiver that the higher layer data unit carried in the current data segment continues to a next lower level protocol data unit (continuing of message COM in the SAR-PDU unit of the SAR sublayer, see col. 3, lines 31-67).

Regarding claim 13, Kudoh discloses the system of claim 10, wherein the segmentation length information points exactly to an end of the lower layer protocol data unit where the higher layer data unit ends (ending of message EOM in the SAR-PDU unit of the SAR sublayer, see col. 3, lines 31-67).

Regarding claims 14, 20, Kudoh discloses a telecommunications system and a network element (packet disassembler, see Figs. 2 and 5), comprising:

a network element being configured to support an upper protocol layer including upper layer data units (CS sublayer includes CS-PDU units, see col. 3, lines 31-67);

a network element being configured to support a lower protocol layer (SAR sublayer) including protocol data units (SAR-PDU) having a payload size smaller than the upper layer data units (SAR-PDU units have payload size smaller the CS-PDU units in the CS sublayer, see col. 3, lines 31-50 and Fig. 3);

a network element being configured to segment larger data units of a higher layer (CS Sublayer protocol data unit CS-PDU) into smaller protocol data units of a lower layer (CS Sublayer protocol data unit CS-PDU is divided into smaller SAR sublayer cell data units, SAR-PDU, see col. 3, lines 24-67 and Fig. 3) so that each lower layer protocol data unit includes one or more data segments each containing data from a different one of the upper layer data units (each of the lower layer SAR-PDU units includes a different one of the upper CD-PDU units, see Fig. 3);

a network element being configured to insert segmentation length information (combined information of ST an LI fields is interpreted as the segmentation length information, Fig. 4) which indicates length of the data segments (LI field) at least in each lower layer protocol data unit (SAR-PDU unit, Fig. 4 and col. 7, lines 3-9) that contains two or more data segments (each SAR-PDU contains SARH, SART, and SAR-SDU, Fig. 3);

a network element being configured to assemble the segmented upper level data units from received lower layer protocol data units at a receiver by means of the segmentation length

information in the lower layer protocol data units (SAR-PDUs are assembled into a higher layer CS-PDU using the LI field of the segmentation length information, see col. 7, lines 3-9).

two or more payload units (SAR-SDU units) of a predetermined length in each lower level protocol data unit (SAR-PDU units), with two or more payload units of a predetermined length for carrying the segmented higher layer data units (SAR-SDU payload units are of 44 bytes predetermined length), the payload unit being a smallest unit in a retransmission protocol employed (SAR-SDU being the smallest unit, see Fig. 3);

a segmentation indicator field in a beginning of one or more of the payload units in the lower level protocol data unit, if required (providing SARH at the beginning of each SAR-PDU unit, see Fig. 3); and

at least one indicator in a header (Segment Type ST) of the lower layer protocol data unit (Segment Type ST in the header of the SAR-PDU)which one or ones, if any, of the payload units contain the segmentation length information (Segment Type indicates whether it is the ending of message EOM, and if it is, the last payload unit is appended with LI effective length information, see col. 3, lines 51-67 and Fig. 3).

Kudoh does not explicitly show two or more different upper layer data units nor a network element being configured to provide a predetermined value in the segmentation length information to a receiver, the predetermined value including special information about the upper level protocol data unit instead of the length of the segments.

However, Jeon teaches that in a Common Part Convergence Sublayer comprising a plurality of CPCS-PDUs (two or more different higher layer data units), and each CPCS-PDU is divided into a plurality of SAR-PDU segments wherein a segment type field ST is used as a

special information to indicate which portion of the upper layer CPCS-PDU each SAR-PDU segment is located in (col. 1, lines 54-67 and col. 2, lines 1-16). Jeon shows the specific use of the ST field in the SAR-PDU.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine data assembling/disassembling system and method of Kudoh with the teaching of Jeon in disclosing the segment type field ST (predetermined value in the segmentation length information) of each of SAR-PDUs contains special information to indicate which portion of the upper layer CPCS-PDU each SAR-PDU segment is located in such that the modified method and system of Kudoh discloses a network element being configured to provide a predetermined value in the segmentation length information to a receiver, the predetermined value including special information about the upper level protocol data unit instead of the length of the segments.

The motivation to do so is to indicate whether the SAR-PDU segment is a BOM Beginning of Message, COM (Continuation of Message), or EOM (End of Message).

Regarding claim 15, Kudoh discloses a data segmentation method in a telecommunication system, comprising:

segmenting larger first data units of a higher protocol layer (CS Sublayer protocol data unit CS-PDU) into data segments that can be accommodated by smaller second data units of a lower protocol layer (CS Sublayer protocol data unit CS-PDU is divided into smaller SAR sublayer cell data units, SAR-PDU, see col. 3, lines 24-67 and Fig. 3), each second data unit comprising one or more data segments (each SAR-PDU contains SARH, SART and SAR-SDU),

each data segment containing data from a different one of the first data units (each SAR-SDU contains data from a different part of the CS-PDU in the CS sublayer, see col. 3, lines 31-67 and Fig. 3);

providing the second data units with segmentation length information (SAR-PDUs are provided with LI effective length information) when the second data unit contains two or more data segments (SAR-PDU contains SARH, SART, and SAR-SDU, see col. 3, lines 31-67 and Fig. 3);

transmitting the lower level protocol data units to a receiving end (transmitting SAR-PDUs to buffer device, see element 3, Fig. 1); and

assembling the segmented higher level data unit at the receiving end by means of the segmentation length information (SAR-PDUs are assembled into a higher layer CS-PDU, see col. 4, lines 22-33).

values of said segmentation length information (LI field of the combined information of the ST and LI fields) other than said predetermined values indicating the length of the data segments (other than the ST field, LI field indicates the effective length of the SAR-PDU, col. 7, lines 3-9).

Kudoh does not explicitly show two or more data segments carrying data from two or more first data units nor indicating with predetermined values of the segmentation length information special information about the first data units.

However, Jeon teaches that in a Common Part Convergence Sublayer comprising a plurality of CPCS-PDUs (two or more different higher layer data units), and each CPCS-PDU is divided into a plurality of SAR-PDU segments wherein a segment type field ST is used as a

special information to indicate which portion of the upper layer CPCS-PDU each SAR-PDU segment is located in (col. 1, lines 54-67 and col. 2, lines 1-16). Jeon thus shows the specific use of the ST field in the SAR-PDU.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine data assembling/disassembling system and method of Kudoh with the teaching of Jeon in disclosing the segment type field ST (predetermined value in the segmentation length information) of each of SAR-PDUs contains special information to indicate which portion of the upper layer CPCS-PDU each SAR-PDU segment is located in such that the modified method and system of Kudoh will show two or more data segments carrying data from two or more first data units and indicate with predetermined values of the segmentation length information special information about the first data units.

The motivation to do so is to indicate whether the SAR-PDU segment is a BOM Beginning of Message, COM (Continuation of Message), or EOM (End of Message) of the corresponding CS-PDU.

Regarding claims 16, 19-20, Kudoh discloses a telecommunications system and a network element (packet disassembler, see Figs. 2 and 5),

a network element being configured to support an upper protocol layer including first data units (CS sublayer includes CS-PDU units, see col. 3, lines 31-67);

a network element being configured to support a lower protocol layer (SAR sublayer) including second data unit (SAR-PDU) having a payload size smaller than first data units (SAR-

PDU units have payload size smaller the CS-PDU units in the CS sublayer, see col. 3, lines 31-50 and Fig. 3);

a network element being configured to segment said first data units (CS Sublayer protocol data unit CS-PDU) into data segments that can be accommodated by the second data units for insertion into the second data units (CS Sublayer protocol data unit CS-PDU is divided into smaller SAR sublayer cell data units, SAR-PDU, see col. 3, lines 24-67 and Fig. 3) each second data unit comprising one or more data segments (each SAR-PDU contains SARH, SART, and SAR-SDU), each data segment containing data from a different one of the first data units (each of the lower layer SAR-PDU units includes a different one of the upper CD-PDU units, see Fig. 3);

values of said segmentation length information (LI field of the combined information of the ST and LI fields) other than said predetermined values indicating the length of the data segments (other than the ST field, LI field, a part of the combined information of ST and LI, indicates the effective length of the SAR-PDU, col. 7, lines 3-9).

a network element being configured to insert a segmentation length information in the second data units when the second data unit contains data from two or more of the first data units (LI is inserted in the SART of the SAR-PDU to indicate the effective length information, see col. 3, lines 51-67 and Figs. 3; note that SAR-PDUs containing SAR-SDUs);

a network element being configured to assemble the segmented first data unit from received second data units at the receiver by means of the segmentation length information in said second data units (SAR-PDUs are assembled into a higher layer CS-PDU, see col. 4, lines 22-33 and Figs. 2 and 5).

Kudoh does not explicitly show two or more data segments carrying data from two or more first data units nor giving a predetermined values of the segmentation length information in order to provide a receiver with special information about the first data units.

However, Jeon teaches that in a Common Part Convergence Sublayer comprising a plurality of CPCS-PDUs (two or more different higher layer data units), and each CPCS-PDU is divided into a plurality of SAR-PDU segments wherein a segment type field ST is used as a special information to indicate which portion of the upper layer CPCS-PDU each SAR-PDU segment is located in (col. 1, lines 54-67 and col. 2, lines 1-16). Jeon thus shows the specific use of the ST field in the SAR-PDU.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine data assembling/disassembling system and method of Kudoh with the teaching of Jeon in disclosing the segment type field ST (predetermined value in the segmentation length information) of each of SAR-PDUs contains special information to indicate which portion of the upper layer CPCS-PDU each SAR-PDU segment is located in such that the modified method and system of Kudoh will show two or more data segments carrying data from two or more first data units and indicate with predetermined values of the segmentation length information special information about the first data units.

The motivation to do so is to indicate whether the SAR-PDU segment is a BOM Beginning of Message, COM (Continuation of Message), or EOM (End of Message) of the corresponding CS-PDU.

4. Claims 17, 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kudoh in view of Jeon, and in further view of Duault et al. (USP 5,930,265).

Regarding claim 17, Kudoh discloses a network element (packet disassembler, see Fig. 5), comprising

a network element being configured to support an upper protocol layer including first data units (CS sublayer includes CS-PDU units, see col. 3, lines 31-67);

a network element being configured to support a lower protocol layer (SAR sublayer) including second data unit (SAR-PDU) having a payload size smaller than first data units (SAR-PDU units have payload size smaller the CS-PDU units in the CS sublayer, see col. 3, lines 31-50 and Fig. 3);

a network element being configured to segment said first data units (CS Sublayer protocol data unit CS-PDU) into data segments that can be accommodated by the second data units for insertion into the second data units (CS Sublayer protocol data unit CS-PDU is divided into smaller SAR sublayer cell data units, SAR-PDU, see col. 3, lines 24-67 and Fig. 3) each second data unit comprising one or more data segments (each SAR-PDU contains SARH, SART, and SAR-SDU), each data segment containing data from a different one of the first data units (each of the lower layer SAR-PDU units includes a different one of the upper CD-PDU units, see Fig. 3);

a network element being configured to insert a segmentation length information in the second data units when the second data unit contains data from two or more of the first data units (LI is inserted in the SART of the SAR-PDU to indicate the effective length information, see col. 3, lines 51-67 and Figs. 3; note that SAR-PDUs containing SAR-SDUs);

values of said segmentation length information (LI field of the combined information of the ST and LI fields) other than said predetermined values indicating the length of the data segments (other than the ST field, LI field, a part of the combined information of ST and LI, indicate the effective length of the SAR-PDU, col. 7, lines 3-9).

a network element being configured to assemble the segmented first data unit from received second data units at the receiver by means of the segmentation length information in said second data units (SAR-PDUs are assembled into a higher layer CS-PDU, see col. 4, lines 22-33 and Figs. 2 and 5).

Kudoh does not explicitly show two or more data segments carrying data from two or more first data units nor giving a predetermined values of the segmentation length information in order to provide a receiver with special information about the first data units.

However, Jeon teaches that in a Common Part Convergence Sublayer comprising a plurality of CPCS-PDUs (two or more different higher layer data units), and each CPCS-PDU is divided into a plurality of SAR-PDU segments wherein a segment type field ST is used as a special information to indicate which portion of the upper layer CPCS-PDU each SAR-PDU segment is located in (col. 1, lines 54-67 and col. 2, lines 1-16). Jeon thus shows the specific use of the ST field in the SAR-PDU.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine data assembling/disassembling system and method of Kudoh with the teaching of Jeon in disclosing the segment type field ST (predetermined value in the segmentation length information) of each of SAR-PDUs contains special information to indicate which portion of the upper layer CPCS-PDU each SAR-PDU segment is located in such that the

modified method and system of Kudoh will show two or more data segments carrying data from two or more first data units and indicate with predetermined values of the segmentation length information special information about the first data units.

The motivation to do so is to indicate whether the SAR-PDU segment is a BOM Beginning of Message, COM (Continuation of Message), or EOM (End of Message) of the corresponding CS-PDU.

Kudoh and Jeon do not explicitly show a mobile station is used as the network element to implement the data assembling and disassembling functions mentioned above.

However, Duault discloses a data processing system and method of communicating mobile voice data with ATM network (see col. 4, lines 54-67 and Fig. 1).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine data assembling/disassembling system and method of Kudoh and Jeon with the Duault's teaching of mobile voice data communicating with an ATM network such that the mobile station is used as the network element to implement the functions of the data assembling and disassembling. The motivation to do so is to provide the ability of transporting variable length data packets into conventional ATM cells with minimum delay.

Regarding claim 18, Kudoh discloses a network element (packet disassembler, see Fig. 5), comprising

a network element being configured to segment an upper protocol layer including upper layer data units (CS sublayer includes CS-PDU units, see col. 3, lines 31-67);

a network element being configured to support a lower protocol layer (SAR sublayer) including protocol data units (SAR-PDU) having a payload size smaller than the upper layer data units (SAR-PDU units have payload size smaller the CS-PDU units in the CS sublayer, see col. 3, lines 31-50 and Fig. 3);

a network element being configured to segment larger data units of a higher layer (CS Sublayer protocol data unit CS-PDU) into smaller protocol data units of a lower layer (CS Sublayer protocol data unit CS-PDU is divided into smaller SAR sublayer cell data units, SAR-PDU, see col. 3, lines 24-67 and Fig. 3) so that each lower layer protocol data unit includes one or more data segments each containing data from a different one of the upper layer data units (each of the lower layer SAR-PDU units includes a different one of the upper CD-PDU units, see Fig. 3);

values of said segmentation length information (LI field of the combined information of the ST and LI fields) other than said predetermined values indicating the length of the data segments (other than the ST field, LI field, a part of the combined information of ST and LI, indicate the effective length of the SAR-PDU, col. 7, lines 3-9).

a network element being configured to assemble the segmented higher level data units from received lower layer protocol data units at the receiver by means of the segmentation length information in the protocol data units (SAR-PDUs are assembled into a higher layer CS-PDU, see col. 4, lines 22-33 and Figs. 2 and 5).

two or more payload units (SAR-SDU units) of a predetermined length in each lower level protocol data unit (SAR-PDU units), with two or more payload units of a predetermined length for carrying the segmented higher layer data units (SAR-SDU payload units are of 44

bytes predetermined length), the payload unit being a smallest unit in a retransmission protocol employed (SAR-SDU being the smallest unit, see Fig. 3);

a segmentation indicator field in a beginning of one or more of the payload units in the lower level protocol data unit, if required (providing SARH at the beginning of each SAR-PDU unit, see Fig. 3); and

at least one indicator in a header (Segment Type ST) of the lower layer protocol data unit (Segment Type ST in the header of the SAR-PDU)which one or ones, if any, of the payload units contain the segmentation length information (Segment Type indicates whether it is the ending of message EOM, and if it is, the last payload unit is appended with LI effective length information, see col. 3, lines 51-67 and Fig. 3).

Kudoh does not explicitly show two or more data segments carrying data from two or more first data units nor setting a predetermined values of the segmentation length information in order to provide a receiver with special information about the first data units.

However, Jeon teaches that in a Common Part.Convergence Sublayer comprising a plurality of CPCS-PDUs (two or more different higher layer data units), and each CPCS-PDU is divided into a plurality of SAR-PDU segments wherein a segment type field ST is used as a special information to indicate which portion of the upper layer CPCS-PDU each SAR-PDU segment is located in (col. 1, lines 54-67 and col. 2, lines 1-16). Jeon thus shows the specific use of the ST field in the SAR-PDU.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine data assembling/disassembling system and method of Kudoh with the teaching of Jeon in disclosing the segment type field ST (predetermined value in the

segmentation length information) of each of SAR-PDUs contains special information to indicate which portion of the upper layer CPCS-PDU each SAR-PDU segment is located in such that the modified method and system of Kudoh will show two or more data segments carrying data from two or more first data units and indicate with predetermined values of the segmentation length information special information about the first data units.

The motivation to do so is to indicate whether the SAR-PDU segment is a BOM Beginning of Message, COM (Continuation of Message), or EOM (End of Message) of the corresponding CS-PDU.

Kudoh and Jeon do not explicitly show a mobile station is used as the network element to implement the data assembling and disassembling functions mentioned above.

However, Duault discloses a data processing system and method of communicating mobile voice data with ATM network (see col. 4, lines 54-67 and Fig. 1). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine data assembling/disassembling system and method of Kudoh and Jeon with Duault's teaching of mobile voice data communicating with an ATM network such that the mobile station is used as the network element to implement the functions of the data assembling and disassembling. The motivation to do so is to provide the ability of transporting variable length data packets into conventional ATM cells with minimum delay.

5. Claims 21-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kudoh in view of Jeon, and in further view of Nakakita et al. (USP 6,061,820).

Regarding claim 21, Kudoh discloses a method, comprising:

configured to segment (disassembling, col. 3, lines 24-30 and Fig. 3) larger data units of a higher layer (CS Sublayer protocol data unit CS-PDU) into smaller protocol data units of a lower layer (CS Sublayer protocol data unit CS-PDU is divided into smaller SAR sublayer cell data units, SAR-PDU, see col. 3, lines 24-67 and Fig. 3) so that each lower layer protocol data unit includes one or more data segments each containing data from a different one of the higher layer data units (each of the lower layer SAR-PDU units includes a different one of the upper CD-PDU units, see Fig. 3);

configured to insert in a lower layer protocol data unit contains two or more data segments (each SAR-PDU contains SARH, SART, and SAR-SDU, Fig. 3).

Kudoh does not explicitly show two or more different upper layer data units nor having one of predetermined values which, instead of the length of the segments, indicates other special information about said two or more different higher layer protocol data units segmented into the respective lower layer data unit, so as to enable associated each of said two or more data segments in said lower layer protocol data unit with an appropriate one of said two or more different higher layer data units when assembling the segmented higher level data unit at a receiving end.

However, Jeon teaches that in a Common Part Convergence Sublayer comprising a plurality of CPCS-PDUs (two or more different higher layer data units), and each CPCS-PDU is divided into a plurality of SAR-PDU segments wherein a segment type field ST of the SAR-

PDU segment is used as a special information to indicate which portion of the upper layer CPCS-PDU each SAR-PDU segment is located in (col. 1, lines 54-67 and col. 2, lines 1-16). Jeon shows the specific use of the ST field in the SAR-PDU.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine data assembling/disassembling system and method of Kudoh with the teaching of Jeon in disclosing the segment type field ST of each of SAR-PDUs contains special information to indicate which portion of the upper layer CPCS-PDU each SAR-PDU segment is located in such that the modified method and system of Kudoh will include two or more different upper layer data units and have one of predetermined values which, instead of the length of the segments, indicates other special information about said two or more different higher layer protocol data units segmented into the respective lower layer data unit, so as to enable associated each of said two or more data segments in said lower layer protocol data unit with an appropriate one of said two or more different higher layer data units when assembling the segmented higher level data unit at a receiving end.

The motivation to do so is to indicate whether the SAR-PDU segment is a BOM Beginning of Message, COM (Continuation of Message), or EOM (End of Message).

Kudoh and Jeon do not explicitly show an apparatus with data segmentation units to implement the data assembling function mentioned above.

However, Nakakita discloses a cell assembling apparatus (combined modules of CSPS processing module, SAR processing module, ATM header attaching module, elements 14t, 20t,

22t, Fig. 3) for segmenting higher layer CSPS-PDUs into ATM cells for transmission across an ATM network from a transmitting end to a receiving end (elements 14t, 20t, 22t, Fig. 3).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine data assembling/disassembling system and method of Kudoh and Jeon with the teaching of Nakakita in having a cell assembling apparatus for segmenting higher layer CSPS-PDUs into ATM cells for transmission across an ATM network from a transmitting end to a receiving end such that the segmentation method of Kudoh is implemented by the data assembling apparatus of Nakakita.

The motivation to do so is to implement an apparatus to perform the segmentation method of Kudoh such that CSPS-PDUs are converted into fixed length ATM cells for transmission across an ATM network.

Regarding claim 22, Kudoh and Nakakita disclose the apparatus to perform the method of claim 21, wherein the special information includes indication whether the higher layer data unit ends in a current data segment (ending of message EOM, see col. 3, lines 31-67) or continues to a next lower level protocol data unit (continuing of message COM, see col. 3, lines 31-67).

Regarding claim 23, Kudoh and Nakakita disclose the method of claim 21, further comprising indicating with a predetermined value of the segmentation length information that the rest of the lower level protocol data unit contains padding until a next segmentation length information or a next lower level protocol data unit contains padding (see the PAD field, which

is a preset integer of β bytes, of the SAR-PDU unit in the SAR Sublayer, see col. 3, lines 31-42 and Fig. 4).

Regarding claim 24, Kudoh and Nakakita disclose the method of claim 21, further comprising indicating with the segmentation length information an exact point in the end of the lower layer protocol data unit that the higher layer data unit ends (ending of message EOM in the SAR-PDU unit of the SAR sublayer, see col. 3, lines 31-67).

Regarding claim 25, Kudoh and Nakakita disclose the method of claim 21, further comprising indicating with a predetermined value of the segmentation length information that the higher layer data unit carried in a current data segment continues to a next lower level protocol data unit (continuing of message COM in the SAR-PDU unit of the SAR sublayer, see col. 3, lines 31-67).

Regarding claim 26, Kudoh discloses a method, comprising:

configured to assemble larger data units of a higher layer (CS Sublayer protocol data unit CS-PDU) from data segments received in smaller protocol data units of a lower layer (CS Sublayer protocol data unit CS-PDU is assembled from smaller SAR sublayer cell data units SAR-PDU, col. 3, lines 24-50, Figs. 1 and 3) so that each lower layer protocol data unit includes one or more data segments each containing data from a different one of the higher layer data units (each of the lower layer SAR-PDU units includes a different one of the upper CD-PDU units, see Fig. 3);

configured to extract from a lower layer protocol data unit (from SAR-PDU, Fig. 1) contains two or more data segments (each SAR-PDU contains SARH, SART, and SAR-SDU, Fig. 3).

Kudoh does not explicitly show two or more different upper layer data units nor having one of predetermined values which, instead of the length of the segments, indicates other special information about said two or more different higher layer protocol data units segmented into the respective lower layer data unit, so as to enable associated each of said two or more data segments in said lower layer protocol data unit with an appropriate one of said two or more different higher layer data units when assembling the segmented higher level data unit at a receiving end.

However, Jeon teaches that in a Common Part Convergence Sublayer comprising a plurality of CPCS-PDUs (two or more different higher layer data units), and each CPCS-PDU is divided into a plurality of SAR-PDU segments wherein a segment type field ST of the SAR-PDU segment is used as a special information to indicate which portion of the upper layer CPCS-PDU each SAR-PDU segment is located in (col. 1, lines 54-67 and col. 2, lines 1-16). Jeon shows the specific use of the ST field in the SAR-PDU.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine data assembling/disassembling system and method of Kudoh with the teaching of Jeon in disclosing the segment type field ST of each of SAR-PDUs contains special information to indicate which portion of the upper layer CPCS-PDU each SAR-PDU segment is located in such that the modified method and system of Kudoh will include two or more different upper layer data units and have one of predetermined values which, instead of the

length of the segments, indicates other special information about said two or more different higher layer protocol data units segmented into the respective lower layer data unit, so as to enable associated each of said two or more data segments in said lower layer protocol data unit with an appropriate one of said two or more different higher layer data units when assembling the segmented higher level data unit at a receiving end.

The motivation to do so is to indicate whether the SAR-PDU segment is a BOM Beginning of Message, COM (Continuation of Message), or EOM (End of Message).

Kudoh and Jeon do not explicitly show an apparatus with data desegmentation units to implement the data disassembling function mentioned above.

However, Nakakita discloses a cell disassembling apparatus (combined modules of CSPS processing module, SAR processing module, ATM header attaching module, elements 14r, 20t, 22r, Fig. 3) for desegmenting lower layer ATM cells back into higher layer CSPS-PDUs for the ATM cells received at a receiving end (elements 14t, 20t, 22t, Fig. 3).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine data assembling/disassembling system and method of Kudoh and Jeon with the teaching of Nakakita in having a cell disassembling apparatus for desegmenting lower layer ATM cells back into higher layer CSPS-PDUs for the ATM cells received at a receiving end such that the desegmentation method of Kudoh is implemented by the data disassembling apparatus of Nakakita.

The motivation to do so is to implement an apparatus to perform the desegmentation method of Kudoh such that the original CSPS-PDUs can be recovered from the fixed length ATM cells received from an ATM network.

Regarding claim 27, Kudoh and Nakakita disclose the apparatus to perform the method of claim 26, wherein the special information includes indication whether the higher layer data unit ends in a current data segment (ending of message EOM, see col. 3, lines 31-67) or continues to a next lower level protocol data unit (continuing of message COM, see col. 3, lines 31-67).

Regarding claim 28, Kudoh and Nakakita disclose the method of claim 26, further comprising indicating with a predetermined value of the segmentation length information that the rest of the lower level protocol data unit contains padding until a next segmentation length information or a next lower level protocol data unit contains padding (see the PAD field, which is a preset integer of β bytes, of the SAR-PDU unit in the SAR Sublayer, see col. 3, lines 31-42 and Fig. 4).

Regarding claim 29, Kudoh and Nakakita disclose the method of claim 26, further comprising indicating with the segmentation length information an exact point in the end of the lower layer protocol data unit that the higher layer data unit ends (ending of message EOM in the SAR-PDU unit of the SAR sublayer, see col. 3, lines 31-67).

Regarding claim 30, Kudoh and Nakakita disclose the method of claim 26, further comprising indicating with a predetermined value of the segmentation length information that the higher layer data unit carried in a current data segment continues to a next lower level protocol data unit (continuing of message COM in the SAR-PDU unit of the SAR sublayer, see col. 3, lines 31-67).

Response to Arguments

6. Applicant's remarks/arguments with respect to claims 1-20 have been considered but are not moot in view of the new ground(s) of rejection.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Mew whose telephone number is 571-272-3141. The examiner can normally be reached on 9:00 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seema Rao can be reached on 571-272-3174. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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